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Vaccination of Calves for Respiratory Disease on U.S. Beef Cow-calf Operations

Vaccinations are an integral tool for the prevention of disease and for maintaining herd health. Immunizations can improve health and productivity in the herd and reduce disease occurrence in animals as they move to subsequent stages of beef production.

In many cases, beef calves leave the operation either at or shortly after weaning and are sent to stocker or backgrounding operations or directly to feedlots. Preconditioning programs have been designed to prepare calves to move from the cow-calf herd to the feedlot with as little adverse impact on health as possible. These programs may or may not include guidelines or requirements for respiratory vaccinations, weaning management, and nutritional management. The largest disease burden experienced by animals in feedlots is attributed to respiratory disease.

The U.S. Department of Agriculture's National Animal Health Monitoring System (NAHMS) conducted the Beef 2007–08 study, which focused on beef cow-calf health and management practices in 24 States.* These States represented 79.6 percent of U.S. operations with beef cows and 87.8 percent of U.S. beef cows.

One of the goals of the Beef 2007–08 study was to take an in-depth look at calf vaccination practices on the Nation's beef cow-calf operations.

General vaccination practices

Overall, only 11.7 percent of operations vaccinated any calves from birth to 21 days of age for any diseases. In contrast, 62.3 percent of operations vaccinated any calves from 22 days of age to weaning for any diseases. Approximately one of three operations vaccinated any calves of this age group specifically for respiratory pathogens.

* Regions:

West: California, Colorado, Idaho, Montana, New Mexico, Oregon, Wyoming

Central: Iowa, Kansas, Missouri, Nebraska, North Dakota, South Dakota

Southeast: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, Texas, Virginia

Calf respiratory disease vaccination

Overall, 60.6 percent of operations did not typically vaccinate calves against respiratory disease before sale (table 1). However, the percentage of operations that did not usually vaccinate calves against respiratory disease was strongly related to herd size. A higher percentage of operations with 1 to 49 beef cows than operations with 50 or more beef cows did not vaccinate calves against respiratory disease from birth to sale. Similarly, a higher percentage of operations with 50 or more beef cows vaccinated calves 2 or more times from birth to sale compared with operations with 1 to 49 beef cows. About 4 of 10 operations with 200 or more cows (41.8 percent) vaccinated calves against respiratory disease two times before sale. Overall, a relatively small percentage of operations (2.8 percent) vaccinated calves three or more times for respiratory disease before sale.

Table 1. Percentage of Operations by Number of Times Calves were Typically Vaccinated Against Respiratory Disease from Birth to Sale, and by Herd Size

Number of Times	Percent Operations				
	Herd Size (Number of Beef Cows)				
	1-49	50-99	100-199	200 or More	All Ops.
Pct.	Pct.	Pct.	Pct.	Pct.	Pct.
0	73.7	36.9	28.3	18.0	60.6
1	13.6	21.7	26.3	24.2	16.6
2	12.7	33.2	38.7	41.8	20.0
3 or more	0.0	8.2	6.7	16.0	2.8
Total	100.0	100.0	100.0	100.0	100.0

Overall, 69.1 percent of calves were vaccinated against respiratory disease (table 2). The percentage of calves that did not receive vaccinations against respiratory disease varied by herd size and ranged from 63.9 percent of calves on operations with 1 to 49 cows to 11.9 percent on operations with 200 or more cows. One-half of calves on operations with 200 or more cows (50.0 percent) were vaccinated against respiratory disease 2 times compared with 16.8 percent of calves on operations with 1 to 49 cows.

Table 2. Percentage of Calves by Number of Times Calves were Typically Vaccinated Against Respiratory Disease from Birth to Sale, and by Herd Size

Percent Calves					
Herd Size (Number of Beef Cows)					
	1-49	50-99	100-199	200 or More	All Ops.
Number of Times	Pct.	Pct.	Pct.	Pct.	Pct.
0	63.9	31.7	27.4	11.9	30.9
1	19.3	21.8	29.8	20.8	22.5
2	16.8	36.9	35.1	50.0	36.7
3 or more	0.0	9.6	7.7	17.3	9.9
Total	100.0	100.0	100.0	100.0	100.0

A higher percentage of operations in the Central region vaccinated calves against respiratory disease than operations in the Southeast region (66.9 and 26.7 percent, respectively) [table 3].

Table 3. Percentage of Operations by Number of Times Calves were Typically Vaccinated Against Respiratory Disease from Birth to Sale, and by Region

Percent Operations			
Region			
	West	Central	Southeast
Number of Times	Pct.	Pct.	Pct.
0	42.5	33.1	73.3
1	26.1	30.1	10.3
2	28.9	30.7	14.8
3 or More	2.5	6.1	1.6
Total	100.0	100.0	100.0

A lower percentage of calves in the Southeast region (48.3 percent) were vaccinated against respiratory disease compared with calves in the West and Central regions (86.8 and 84.6 percent, respectively). About one-half of calves in the West region (50.2 percent) were vaccinated 2 times against respiratory disease from birth to sale, while about 4 of 10 calves in the Central region (43.0 percent) and one-quarter of calves in the Southeast region (25.9 percent) were vaccinated 2 times (table 4).

Table 4. Percentage of Calves by Number of Times Calves were Typically Vaccinated Against Respiratory Disease from Birth to Sale, and by Region

Percent Calves			
Region			
	West	Central	Southeast
Number of Times	Pct.	Pct.	Pct.
0	13.2	15.4	51.7
1	26.7	27.7	16.2
2	50.2	43.0	25.9
3 or More	9.9	13.9	6.2
Total	100.0	100.0	100.0

The timing of when to vaccinate calves against respiratory disease is important to the effectiveness of a preconditioning program. For the 39.4 percent of operations that vaccinated any calves for respiratory disease before sale (table 1), 49.8 percent vaccinated at least 31 days prior to weaning; 38.1 percent vaccinated at the time of weaning; and 28.9 percent vaccinated after weaning but before sale. The percentages of operations that vaccinated calves against respiratory disease were similar across herd sizes and all other time periods relative to weaning and sale (table 5).

Table 5. For Operations that Vaccinated Calves Against Respiratory Disease before Sale, Percentage of Operations by when Calves were Vaccinated and by Herd Size

Percent Operations					
Herd Size (Number of Beef Cows)					
	1-49	50-99	100-199	200 or More	All Ops.
Vaccinated ...	Pct.	Pct.	Pct.	Pct.	Pct.
After weaning but before sale	27.4	24.9	39.5	27.6	28.9
At weaning	30.2	47.6	40.8	44.6	38.1
Less than 14 days prior to weaning	10.3	12.1	11.9	11.3	11.2
30 to 14 days prior to weaning	12.9	24.9	36.1	39.0	22.8
From birth through 31 days prior to weaning	51.4	51.4	40.8	53.2	49.8

There were few differences in the timing of vaccination of calves for respiratory disease by region, with the exception that in the West region a higher percentage of operations vaccinated calves from 30 to 14 days prior to weaning compared with the Southeast region (41.1 and 12.0 percent, respectively) [table 6].

Table 6. For Operations that Vaccinated Calves against Respiratory Disease before Sale, Percentage of Operations by when Calves were Vaccinated and by Region

	Percent Operations		
	Region		
	West	Central	Southeast
Vaccinated . . .	Pct.	Pct.	Pct.
After weaning but before sale	10.8	28.5	34.2
At weaning	29.6	42.4	36.4
Less than 14 days prior to weaning	10.8	12.6	9.9
30 to 14 days prior to weaning	41.1	28.7	12.0
From birth through 31 days prior to weaning	55.6	43.9	53.7

Summary

Preconditioning beef calves can affect the subsequent occurrence of respiratory disease and, in turn, the productivity of calves. In some cases, preconditioning calves can result in price premiums to the producer. There are many reasons why some producers may not precondition their calves, including uncertainty about the return on investment for preconditioning or inadequate facilities or labor to handle and hold calves for processing.

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